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### REMARKS

Claims 1-31 are pending in the present application. Reconsideration is respectfully requested for the following reasons.

Claims 7-21 and 27-31 have been rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctively claim the subject matter which Applicant regards as the invention.

According to the Office Action, the phrase “collapsible with a parallelogram motion” is indefinite. Although not pointed out in the Office Action, this phrase is only used in claims 7, 9 and 21. Furthermore, according to the Office Action, “there is no parallelogram motion disclosed.” Both claims 7 and 9 state that the top and bottom nose portions are collapsible with a parallelogram motion that shifts one or both of the front walls of the top and bottom nose portions vertically. As illustrated in Figs. 3 and 4 of the present application, the nose portion 26 includes a front wall 54. The nose portion 26 also includes a portion of the top wall 52 and a portion of the upper-mid wall 53 of the top horizontal section 23. As illustrated in Fig. 4, as the nose portion 26 collapses, the portion of the top wall 52 and the portion of the upper-mid wall 53 that comprise the nose portion remain parallel. Furthermore, the front wall 54 of the upper nose section moves with the portions of the top wall 52 and the upper-mid wall 53 that form part of the upper nose section to maintain approximately the same angle therebetween as shown in Fig. 4. While there is no wall shown in Fig. 4 opposite to the front wall 54, a rearmost boundary defining the nose portion of the top horizontal section 23 remains parallel with the front wall 54 as the top nose portion collapses. Applicant notes that “the right edge” of the nose portions in the illustrated example are not connected to the beam, but are located before the beam. Accordingly, a parallelogram motion is disclosed and the phrase “collapsible with a parallelogram motion” is definite.

Claim 9 has been rejected as the “top and bottom front walls” lack antecedent basis. However, claim 9 does not include this phrase. Accordingly, claim 9 is believed to be definite.

Claim 14 has been rejected because the phrase “mid-horizontal section” lacks antecedent basis. However, claim 14 was amended in the previous response to provide

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antecedent basis for the phrase “mid-horizontal section.” Accordingly, claim 14 is believed to be definite.

Claim 15 has been rejected because the phrase “nose sections” lacks antecedent basis. However, claim 15 does not include this phrase. Claim 15 has also been rejected because, according to the Office Action, “there is no throwing force.” Applicant does not fully understand this rejection and requests clarification. Notably, the present application discloses that energy directed against a knee of an impact person is converted into a throwing force that directs the person in a direction generally to the side or perpendicular to the line of impact and away from the vehicle bumper system. Applicant notes that claim 15 does not state that a person would be directed upwardly. Accordingly, Applicant submits that claim 15 is definite as defined by the second paragraph of 35 U.S.C. §112.

Claim 16 has been rejected as being indefinite because “no upward plural forces are apparently disclosed as the disclosure has force 31 only.” Claim 16 has been amended to state that the parallelogram motion redirects and converts “an impact force that is initially horizontal against leaning into an upward vertical force.” Applicant submits, however, that in the context of claim 16, “forces” and “force” are synonymous as there is an upward force 31 for each impact force. Accordingly, claim 16 is now believed to be definite.

Claim 21 has been rejected as lacking a clear frame of reference for the phrase “longer than the front wall.” Claim 21 states that “the energy absorber includes at least one section having parallel upper and lower walls . . . and having a front wall; the upper and lower walls being elongated and longer than the front wall.” Accordingly, the upper and lower walls are longer than the front wall. If the Examiner believes that the term “length” is too broad, that should be addressed in a prior art rejection of the claims. Therefore, Applicant submits that claim 21 is definite as written.

Claims 27-31 have been rejected because the term “thin” lacks a frame of reference. The term “thin” has been cancelled from claims 27-31. Accordingly, claims 27-31 are believed to be definite.

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In the view of the above, Applicant submits that claims 7-21 and 27-31 are definite. If the Examiner has any questions, the Examiner is requested to call the undersigned at the number below.

The specification has been objected to as failing to provide proper antecedent basis for the claimed subject matter. According to the Office Action, the specification does not provide antecedent basis for claim 20. However, Figs. 3 and 4 clearly show fascia extending over a beam and energy absorber and fascia cooperating with nose portions during an impact. Furthermore, claim 20 has been inserted into the detailed description of the preferred embodiments of the present invention. Accordingly, Applicant submits that the specification provides antecedent basis for the claimed subject matter.

The specification has also been objected to for not providing proper antecedent basis for the term "thin" as used in claims 27-31. However, since the term "thin" has been removed from claims 27-31 as discussed above, Applicant submits that this objection to the specification is obviated.

Claims 1, 5-8 and 15-21 have been rejected under 35 U.S.C. §102(b) as being anticipated by UK Patent Application GB 2 081 653 A (hereinafter known as "the UK '653 Publication"). "Anticipation requires the presence in a single prior art reference disclosure of each and every element of the claimed invention, *arranged as in the claim.*" *Lindemann Maschinenfabrik GmbH v. American Hoist & Derrick Co.*, 221 USPQ 481, 485 (Fed. Cir. 1984) (emphasis added). In proceedings before the Patent and Trademark Office, the Examiner bears the burden of establishing a prima facie case of anticipation based upon the prior art. *In re Sun*, 31 U.S.P.Q.2d 1451, 1453 (Fed. Cir. 1993) (unpublished). Applicant respectfully asserts that the Examiner has not yet met his burden of establishing a prima facie case of anticipation with respect to the rejected claims.

Claim 1 defines a bumper system for a vehicle including, among other things, a beam for attachment to a vehicle, an energy absorber engaging a face of the beam; the energy absorber having a top horizontal section defined by a top wall and an upper-mid wall connected by an upper-front wall, and having a bottom horizontal section defined by a bottom wall and a lower-mid wall connected by a lower-front wall, and further having a middle horizontal section

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defined by a mid-front wall connecting the upper-mid wall and the lower-mid wall, the top and bottom horizontal sections including top and bottom front nose portions that extend forward of the mid-front wall and that define a horizontal channel therebetween in front of the mid-front wall, the front nose portions being configured to provide a first level of energy absorption during an initial impact stroke that collapses one or both of the front nose portions, and the top, middle, and bottom horizontal sections providing a higher second level of energy absorption during a continuing impact stroke that collapses the energy absorber against the face of the beam, and a fascia covering the energy absorber and the beam, whereby, during an initial front impact stroke, the top and bottom front nose portions provide a relatively low-energy absorption that contacts an impacted object, and then during a further continuing impact stroke, the top, middle, and bottom horizontal sections crush to provide an increased energy absorption.

The prior art of record does not disclose or suggest the above noted features of claim 1. Specifically, the UK '653 publication does not disclose front nose portions being configured to provide a first level of energy absorption during an initial impact stroke that collapses one or both of the front nose portions, and the top, middle, and bottom horizontal sections providing a higher second level of energy absorption during a continuing impact stroke that collapses the energy absorber against the face of the beam. Furthermore, the prior art of record does not disclose or suggest top and bottom front nose portions that provide a relatively low-energy absorber that contacts an impacted object, and then during a further continuing impact stroke, the top, middle, and bottom horizontal sections crush to provide an increase energy absorption. Specifically, the UK '653 publication does not expressly, implicitly or inherently disclose an energy absorber that provides two levels of energy absorption. Accordingly, claim 1 is in condition for allowance.

Claims 2-8, 22 and 27 depend from claim 1, since claim 1 defines unobvious patentable subject matter, claims 2-8, 22 and 27 define unobvious patentable subject matter. Furthermore, in regard to claim 7, the prior art of record does not disclose or suggest top and bottom nose portions that are semi-rigid but collapsible with a parallelogram motion that shifts one of both of the upper and lower front walls vertically. According to the Office Action,

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“[i]mpact with an object of the shape of a knee would inherently shift the nose portions upwardly and downwardly as claimed.” However, claim 7 does not state that the top and bottom nose portions are impacted with an object of the shape of a knee. Claim 7 states that horizontal impact forces are converted at least in part to a vertical force upon receiving a horizontal frontal impact. The energy absorber as disclosed in the UK ‘653 publication includes front planar walls. Therefore, any horizontal impact forces would not be converted into at least in part a vertical force, but the horizontal force would remain a horizontal force. Furthermore, claims 22 and 27 further define the energy absorbers in a manner not disclosed or suggested in the prior art. Accordingly, claims 2-8, 22 and 27 are in condition for allowance.

Claim 15 defines a method including, among other things, constructing a bumper system including a stiff beam, and an energy absorber on a face of the beam, the energy absorber having top, middle, and bottom sections, with the top and bottom sections defining nose portions that extend forward of the middle section, the nose portions defining a space therebetween in front of the middle section, the nose portions being constructed to deflect with a parallelogram motion upon impact, and shifting at least one of the nose portions vertically with a parallelogram motion in response to an impact directed horizontally against a front of the bumper system, whereby energy directed against a knee of an impacted person is converted into a throwing force that directs the person in a direction generally perpendicular to the line of impact and away from the vehicle bumper system.

The prior art of record does not disclose or suggest the above noted features of claim 15. Specifically, as discussed above regarding claim 7, the UK ‘653 publication will not shift any nose portions of the energy absorber vertically in response to an impact directed horizontally against a front of the bumper system. Accordingly, claim 15 is in condition for allowance. Furthermore, claims 24 and 29 depend from claim 15, and since claim 15 defines unobvious patentable subject matter as discussed above, claims 24 and 29 define patentable subject matter. Moreover, claims 24 and 29 define the energy absorber in a manner not disclosed or suggested by the prior art. Accordingly, claims 15, 24 and 29 are in condition for allowance.

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Claim 16 defines a bumper system for a vehicle including, among other things, a bumper beam for attachment to a vehicle, and an energy absorber attached to a face of the bumper beam, the energy absorber including at least one section having parallel upper and lower walls that extend generally perpendicular to the face of the bumper beam and having a main front wall and an angled front wall connecting a front edge of the upper and lower walls, the main front wall and the angled front wall forming a non-planar front surface that, upon a front impact against a pedestrian's knee, causes a structural collapse where the upper and lower walls flex with a parallelogram motion, the parallelogram motion redirecting and converting impact forces that are initially horizontal against the knee into upward vertical forces.

The prior art of record does not disclose or suggest the above noted features of claim 16. Specifically, the prior art of record does not disclose or suggest an energy absorber including at least one section having parallel upper and lower walls and having a main front wall and an angled front wall connecting a front edge of the upper and lower walls. Specifically, the UK '653 publication does not disclose a main front wall and an angled front wall connecting front edges of upper and lower walls. Furthermore, the prior art of record does not disclose or suggest a main front wall and an angled front wall forming a non-planar front surface that redirects and converts impact forces that are initially horizontal into upward vertical forces. Specifically, as discussed above within claim 7, the UK '653 does not disclose or suggest an energy absorber that can convert forces that are initially horizontal into upward vertical forces. Accordingly, claim 16 is in condition for allowance.

Claims 17-20, 25 and 30 depend from claim 16, and since claim 16 defines unobvious patentable subject matter, claims 17-20, 25 and 30 define patentable subject matter. Furthermore, claims 25 and 30 define the energy absorber in a manner not disclosed or suggested by the prior art of record. Accordingly, claims 17-20, 25 and 30 are in condition for allowance.

Claim 21 defines a bumper system for a vehicle including, among other things, a bumper beam for attachment to a vehicle, and an energy absorber attached to a face of the bumper beam, the energy absorber including at least one section having parallel upper and lower walls that extend generally perpendicular to the face of the bumper beam and having a

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front wall, the upper and lower walls being elongated and longer than the front wall and further the upper and lower walls and the front wall being joined to collapse with a parallelogram motion so that, upon a front impact against a pedestrian's knee and leg, the upper and lower walls flex with a parallelogram motion, the parallelogram motion redirecting and converting impact forces that are initially horizontal against the knee into vertical forces less damaging to the pedestrian's knee and leg.

The prior art of record does not disclose or suggest the above noted features of claim 21. Specifically, the UK '653 publication does not disclose or suggest upper and lower walls and a front wall of an energy absorber being joined to collapse with a parallelogram motion and upper and lower walls that flex with a parallelogram motion that redirects and converts impact forces that are initially horizontal against a knee into vertical forces. As discussed above regarding claim 7, the energy absorber of the UK '653 publication does not redirect or convert impact forces that are initially horizontal into vertical forces. Accordingly, claim 21 is in condition for allowance.

Claims 26 and 31 depend from claim 21, and since claim 21 defines unobvious patentable subject matter, claims 26 and 31 define unpatentable subject matter. Furthermore, claims 26 and 31 define the energy absorber in a manner not disclosed or suggested by the prior art. Accordingly, claims 26 and 31 are in condition for allowance.

Claims 9 and 11-14 have been rejected under 35 U.S.C. §103(a) as being unpatentable over the UK '653 publication in view of U.S. Patent No. 5,092,512 to Sturris et al. The requirements for making a *prima facie* case of obviousness are described in MPEP §2143 as follows:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on

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applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990).

In proceedings before the Patent and Trademark Office, the Examiner bears the burden of establishing a prima facie case of obviousness based upon the prior art. *In re Fritch*, 23 USPQ 2d 1780, 1783 (Fed. Cir. 1992); M.P.E.P. §2142. Applicants respectfully assert that the Examiner has not yet met the Examiner's burden of establishing a prima facie case of obviousness with respect to the rejected claims. Consequently, the Examiner's rejection of the subject claims is inappropriate, and should be withdrawn.

Claim 9 defines a bumper system for a vehicle including, among other things, a beam adapted for attachment to a vehicle and having a longitudinal curvature that, when viewed from above in a vehicle-mounted position, is shaped to match an aerodynamic curvilinear shape of a front of the vehicle; an energy absorber engaging a face of the beam; the energy absorber having a top horizontal section defined by a top wall and an upper-mid wall connected by an upper-front wall, and having a bottom horizontal section defined by a bottom wall and a lower-mid wall connected by a lower-front wall, the top and bottom horizontal sections including top and bottom front nose portions that extend forwardly; the top and bottom nose portions each being semi-rigid but collapsible with a parallelogram motion that shifts one or both of the top and bottom front walls vertically, such that horizontal impact forces are converted at least in part to a vertical force upon receiving a horizontal frontal impact during an initial stroke of the frontal impact; whereby, during a first part of the frontal impact, the top and bottom front nose portions provide a relatively low-energy absorption that "catches" an impacted object such as a knee of a human being, and then during a further continuing impact stroke, the top and bottom horizontal sections crush to provide an increased energy absorption.

The prior art of record does not disclose or suggest the above noted features of claim 9. Specifically, the prior art of record does not disclose or suggest top and bottom front nose portions each being semi-rigid but collapsible with a parallelogram motion that shifts one or



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both of upper-front and lower-front walls vertically, such that horizontal impact forces are converted at least in part to a vertical force upon receiving a horizontal frontal impact during an initial stroke of the frontal impact. As discussed above regarding claim 7, the UK '653 publication does not include an energy absorber that would convert a horizontal impact force into at least in part to of a vertical force. Furthermore, the prior art of record does not disclose or suggest an energy absorber that during a first part of a frontal impact has top and bottom front nose portions providing a relatively low-energy absorption that contacts an impacted object, and then during a further continuing impact stroke, the top and bottom horizontal sections crush to provide an increased energy absorption. Specifically, as discussed above regarding claim 1, the UK '653 publication does not disclose two levels of energy absorption. Therefore, the UK '653 publication, even when combined with the Sturrus et al. '512 patent, will not include all the features of claim 9. Accordingly, claim 9 is in condition for allowance.

Claims 10-14, 23 and 28 depend from claim 9, and since claim 9 defines unobvious patentable subject matter, claims 10-14, 23 and 28 define patentable subject matter. Furthermore, claims 23 and 28 define the energy absorber in a manner not disclosed or suggested by the prior art. Accordingly, claims 10-14, 23 and 28 are in condition for allowance.

Claims 3 and 4 have been rejected under 35 U.S.C. §103(a) as being unpatentable over the UK '653 publication. As discussed above, claims 3 and 4 depend from claim 1, and since claim 1 defines unobvious patentable subject matter, claims 3 and 4 define patentable subject matter. Accordingly, claims 3 and 4 are in condition for allowance.

Claims 2 and 10 have been rejected under 35 U.S.C. §103(a) as being unpatentable over the UK '653 publication in view of the Sturrus et al. '512 patent and Japanese Application Publication No. 0172848, having an inventor of Teruo Hamaya (hereinafter known as "the Japanese '848 publication"). The requirements for making a *prima facie* case of obviousness are described in MPEP §2143 as follows:

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in

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the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations.

The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination. *In re Mills*, 916 F.2d 680, 16 USPQ2d 1430 (Fed. Cir. 1990).

In proceedings before the Patent and Trademark Office, the Examiner bears the burden of establishing a prima facie case of obviousness based upon the prior art. *In re Fritch*, 23 USPQ2d 1780, 1783 (Fed. Cir. 1992); M.P.E.P. §2142. Applicants respectfully assert that the Examiner has not yet met the Examiner's burden of establishing a prima facie case of obviousness with respect to the rejected claims. Consequently, the Examiner's rejection of the subject claims is inappropriate, and should be withdrawn.

In regard to the first criterion of obviousness, there is no suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to combine the reference teachings. According to the Office Action;

It would have been obvious to one of our ordinary skill to provide in the references above a wavy top and bottom walls as taught by Hamaya in order to add additional protection for pedestrians upon impact to those locations.

However, nowhere in Hamaya or in any of the references cited in the Office Action is it taught that wavy top and bottom walls provide additional protection for pedestrians upon impact to those locations. As stated above, the teaching or suggestion to make a claim combination must be found in the prior art, not in Applicant's disclosure, and such motivation as set forth in the Office Action is not found in the cited references.

In regard to the third criterion of obviousness, even if there was a suggestion or motivation for making the combination as set forth in the Office Action, such combination would not include all of the features of claims 2 and 10. Claim 2 states that the top and bottom

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walls define wavy and undulating surfaces and claim 10 states that the top and bottom walls are wavy. However, the Japanese '848 publication does not disclose any wavy top and bottom walls. Notably, the Office Action has not pointed out any wavy top and bottom walls. Furthermore, the bumper cover 2, the energy absorber 4 and the bumper frame 1 as disclosed in the Japanese '848 publication all include flat top and bottom planar walls. Accordingly, claims 2 and 10 are in condition for allowance.

Claims 22-26 have been rejected under 35 U.S.C. §103(a) as being unpatentable over the UK '653 publication in view of the Sturrus et al. '512 patent and U.S. Patent No. 5,799,991 to Glance. The criteria for making a *prima facie* case of obviousness are discussed above.

The prior art of record does not disclose or suggest the above noted features of claims 22-26. First, claims 22-26 depend from claims 1, 9, 15, 16 and 21, respectively. As discussed above, claims 1, 9, 15, 15 and 21 define patentable subject matter. Accordingly, claims 22-26 define patentable subject matter. Second, there is no suggestion or motivation for combining the references as set forth in the Office Action. According to the Office Action, "[i]t would have been obvious to one of ordinary skill to provide in Scrivo alone or as modified by Sturrus et al. a foam absorber material as taught by Glance in order to use an absorber commercially available with known properties." However, if the "absorber commercially available with known properties" is the beam as disclosed in the Glance '991 patent, any combination of the UK '635 publication and the Glance '991 patent (either with or without being in combination with the Sturrus et al. '512 patent), such "commercially available" absorber would replace the absorber in the '653 UK publication such that the resulting combination would no longer include the features cited in the Office Action to reject the base claims upon which claims 22-26 depend. Furthermore, there is no suggestion or motivation for making the energy absorber 14 as disclosed in the UK '653 publication out of foam as one skilled in the art would realize that in an energy absorber made entirely out of the foam as disclosed in the Glance '991 patent would be a very large step backwards for absorbing energy compared to the energy absorber disclosed in the UK '635 publication such that an energy absorber made out of that foam would be many orders of magnitude less

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efficient than the bumper assembly disclosed in the UK '635 publication. Accordingly, claims 22-26 are in condition for allowance.

All pending claims 1-31 are believed to be in condition for allowance, and a Notice of Allowability is therefore earnestly solicited.

Respectfully submitted,

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